

CLAIMS

1. A padlock that can be opened either by setting a combination or by a key, having an indicator for indicating whether the padlock has been opened by said key.

2. The padlock of Claim 1 wherein the indicator is capable of displaying a normal first state and a second state, and wherein the indicator displays the first state until the indicator is switched to displaying the second state as the result of the padlock being opened by said key.

3. The padlock of Claim 2 wherein the indicator is resettable from displaying the second state to displaying the first state only after the padlock is opened by setting said combination.

4. The padlock of Claim 1 additionally including a housing and a shackle that is movable relative to the housing between a locked position and an unlocked position when the padlock is opened by said key or by setting said combination, wherein the indicator includes an indicator member connected to the housing for movement between first and second positions and being capable of displaying a first surface that is viewable through a window of the housing when in the indicator member is in the first position, and of displaying a second surface through the window when in the second position, with the first and second surfaces differing in appearance one from the other.

5. The padlock of Claim 4 wherein the first and second surfaces are of different colors.

6. The padlock of Claim 4 wherein the first surface displays the color green, and the second surface displays the color red.

7. The padlock of Claim 4 wherein the shackle also is movable relative to the housing to an indicator reset position after the shackle has been opened by setting said combination, and wherein the indicator is resettable from displaying the second surface to displaying the first surface only by opening the shackle by setting said combination, and by moving the shackle to the indicator reset position.

8. The padlock of Claim 7 wherein the shackle also is movable relative to the housing to a combination reset position after the shackle has been opened by setting said combination, and wherein the combination that is set to open the padlock can be reset from a first combination to a second combination by opening the shackle by setting the first combination, and by moving the opened shackle relative to the housing to the combination reset position.

9. The padlock of Claim 4 additionally including means for biasing the indicator member toward at least a selected one of the first and second positions.

10. The padlock of Claim 4 wherein an indicator reset member is movably supported within the interior of the housing for movement between a normal position of the reset member and reset position of the reset member, and the indicator reset member is adapted to be moved from the normal position of the reset member to the reset position of the reset member for resetting the indicator member

from the second position to the first position in response to the shackle being depressed into the housing.

11. A padlock having a housing and a shackle movable relative to the housing between a locked position and an unlocked position wherein the shackle can be opened for movement from the locked position to the unlocked position either by setting a combination or by a key, and having an indicator capable of displaying a normal first state until the indicator is switched to displaying the second state only as the result of the padlock being opened by said key.

12. The padlock of Claim 11 wherein the indicator is resettable from displaying the second state to displaying the first state only if the shackle is opened by setting said combination.

13. The padlock of Claim 12 wherein the shackle also is movable relative to the housing to an indicator reset position after the shackle has been opened by setting said combination, and wherein the indicator is resettable from displaying the second state to displaying the first state only by opening the shackle by setting said combination and by moving the shackle to the indicator reset position.

14. The padlock of Claim 13 wherein the shackle also is movable relative to the housing to a combination reset position after the shackle has been opened by setting said combination, and wherein the combination that is set to open the padlock can be reset from a first combination to a second combination by opening the shackle by setting the first combination, and by moving the opened

shackle relative to the housing to the combination reset position.

15. The padlock of Claim 11 wherein the housing has an interior region and has a window that opens through a wall of the housing into the interior region, wherein the indicator includes an indicator member supported in the interior region for movement between a first state position and a second state position, with a first surface of the indicator member being displayed in the window of the housing when the indicator is in the first state position so as to display said first state, and with a second surface of the indicator member being displayed in the window of the housing when the indicator is in the second state position so as to display said second state.

16. The padlock of Claim 15 wherein at least a portion of the first surface that is displayed in the window of the housing when the indicator member is in the first state position has an appearance that differs from at least a portion of the second surface that is displayed in the window of the housing when the indicator member is in the second state position.

17. The padlock of Claim 16 wherein said appearance of said portion of said first surface is defined at least in part by a first color, and wherein said appearance of said portion of said second surface is defined at least in part by a second color that differs from the first color.

18. The padlock of Claim 17 wherein said first color is green and wherein said second color is red.

19. The padlock of Claim 15 additionally including means for biasing the indicator member toward at least a selected one of said first state position and said second state position.

20. The padlock of Claim 19 wherein the the indicator member is supported by the housing for pivotal movement through an arc of travel between the first state position and the second state position, and wherein the means for biasing the indicator member functions to bias the indicator member toward the first state position when the indicator member has moved along the arc of travel so as to be located nearer to the first state position than to the second state position, and to bias the indicator member toward the second state position when the indicator member has moved along the arc of travel so as to be located nearer to the second state position than to the first state position.

21. The padlock of Claim 15 wherein the shackle has a leg that extends through an interior portion of the housing, wherein the padlock additionally including a plurality of indicia bearing dials that are connected to said leg within said interior portion of the housing, with said dials projecting through at least one opening defined by the housing so that exterior surface portions of the dials can be accessed for rotating the dials to set said combination by aligning selected one of said indicia to open the padlock.

22. The padlock of Claim 21 wherein said leg of the shackle extends along an imaginary axis about which the dials may be rotated to set said combination, and said leg of the shackle can be depressed into the housing as by moving said leg axially along said axis to cause the

indicator member to move from the second state position to the first state position to reset the indicator in response to said axial movement.

23. The padlock of Claim 22 wherein said leg of the shackle carries means for cooperating with at least one formation of the housing to permit said leg of the shackle from being depressed into the housing and moved along said axis to cause the indicator member to be reset only when the shackle is rotated about said axis relative to said housing to a reset position of the shackle.

24. The padlock of Claim 22 wherein an indicator reset member is movably supported within the interior of the housing for movement between a normal position of the reset member and reset position of the reset member, and the indicator reset member is adapted to be moved from the normal position of the reset member to the reset position of the reset member for resetting the indicator from the second state position to the first state position in response to the shackle being depressed into the housing and moved along said axis.

25. The padlock of Claim 24 additionally including means for biasing the indicator reset member toward the normal position of the reset member and for opposing movement of the reset member from the normal position of the reset member toward the reset position of the reset member.

26. The padlock of Claim 25 wherein the reset member is configured to be engaged by a slide member that is connected to the housing for movement within the interior of the housing between a normal position of the slide member and a key unlocked position of the slide member,

wherein the housing defines a keyhole for receiving said key which is configured to be inserted through the keyhole and turned to open the padlock, wherein a cylinder member 1) is supported for rotation by the housing within the interior of the housing at a location adjacent the keyhole, 2) is configured to be engaged by and rotated by the key when the key is inserted through the keyhole and turned, 3) is configured to move the slide member from the normal position of the slide member wherein the slide prevents the shackle from being opened except when a correct combination is set to open the padlock to the key unlocked position of the slide member wherein the slide member permits the shackle to be opened without setting a correct combination to open the padlock, and 4) is configured to engage the indicator member so as to move the indicator member from the first state position to the second state position as the slide member is moved from the normal position of the slide member to the key unlocked position of the slide member.

27. The padlock of Claim 26 wherein a one-way driving connection is provided between the cylinder member and the slide member that permits rotation of the cylinder member by the key to move the slide member between the normal position of the slide member and the key unlocked position of the slide member, but does not permit movement of the slide member between the normal position of the slide member and the key unlocked position of the slide member to cause rotation of the cylinder.

28. The padlock of Claim 27 wherein the one-way driving connection includes a spiral groove formed on a portion of the slide member that extends into a tubular portion of the cylinder member along an imaginary axis about which the cylinder member rotates relative to the

housing when the key is inserted through the keyhole and turned, and includes a steel ball that is carried in a hole formed through a wall of the tubular portion of the cylinder member, with the ball extending into the spiral groove to drivingly connect the slide member to the cylinder so the slide member will move between the normal position of the slide member and the key unlocked position of the slide member in response to insertion and turning of the key.

29. A padlock having a housing and a shackle that is movable relative to the housing between a locked position and an unlocked position, a locking mechanism for retaining the shackle in the locked position, dial means for causing the locking mechanism to release the shackle for movement from the locked position to the unlocked position in response to entry of a predetermined combination, key responsive means for causing the locking mechanism to release the shackle for movement from the locked position to the unlocked position in response to insertion and turning of a correctly configured key, and an indicator connected to the key responsive means for indicating if the shackle has been released for movement from the locked position to the unlocked position in response to insertion and turning of said key.

30. The padlock of Claim 29 wherein the housing defines an aperture, and wherein the indicator is visible through the aperture to indicate if the shackle has been released for movement from the locked position to the unlocked position in response to said insertion and turning of said key.

31. The padlock of Claim 30 wherein the indicator provides first surface that is viewable through the

aperture when the indicator is in a first position, and a second surface that is viewable through the aperture when the indicator is in a second position, with the first surface being viewable through the aperture when the shackle has been released for movement from the locked position to the unlocked position in response to said entry of said predetermined combination, and with the second surface being viewable through the aperture when the shackle has not been released for movement from the locked position to the unlocked position in response to said insertion and turning of said key.

32. The padlock of Claim 31 wherein the first and second surfaces are of different colors.

33. The padlock of Claim 29 additionally including means for resetting the indicator after the shackle has been released for movement from the locked position to the unlocked position in response to said entry of said predetermined combination.

34. The padlock of Claim 33 wherein the means for resetting the indicator is configured to cause the indicator to be reset in response to depressing the shackle into the housing after the shackle has been released for movement from the locked position to the unlocked position in response to said entry of said predetermined combination.

35. In a padlock of the type having a housing, a shackle that is movable relative to the housing between a locked position and an unlocked position, a locking mechanism for normally retaining the shackle in the locked position, and for responding to entry of a combination and to insertion and turning of a key to release the shackle

for movement from the locked position to the unlocked position, the improvement of an indicator viewable through an aperture defined by the housing for indicating when the locking mechanism has responded to said insertion and turning of said key to release the shackle for movement from the locked position to the unlocked position.

36. The padlock of Claim 35 wherein the indicator can be reset only when the shackle has been moved to the unlocked position as the result of said entry of said combination.

37. The padlock of Claim 36 wherein the indicator is prevented from being reset while said key is inserted and turned.

38. The padlock of Claim 35 wherein the indicator is capable of displaying a normal first state and a second state, and wherein the indicator displays the first state until the indicator is switched to displaying the second state as the result of the padlock being opened by said insertion and turning of said key.

39. The padlock of Claim 38 wherein the indicator is resettable from displaying the second state to displaying the first state only after the padlock is opened by setting said combination.

40. The padlock of Claim 35 wherein the indicator includes an indicator member connected to the housing for movement between first and second positions and being capable of displaying a first surface that is viewable through the aperture of the housing when in the indicator member is in the first position, and of displaying a second surface through the aperture when the indicator

member is in the second position, with the first and second surfaces differing in appearance one from the other.